

The Effects of an Aerobic Exercise Program on Strength and Quality of Life in Lower-Leg Amputees with Post-Traumatic Stress Disorder

Kristin Russell
Gardner-Webb University- Exercise Science

Abstract

Post-traumatic stress disorder (PTSD) is commonly seen in veterans returning home from war; a traumatic event leading to amputation could enhance PTSD episodes. Following an amputation, physical therapists create programs that allow the patient to preform everyday tasks and then they are released. However, some research suggests more therapy is needed to improve quality and overall fitness. With improved quality of life, it is believed that PTSD episode frequency will decrease. This research was done on veterans who suffered from lower leg amputations at the hip. There is a need to determine if an exercise program that focuses on improving aerobic exercise will be beneficial for amputees in comparison to the traditional therapy programs. This study sought to answer this research question. It was hypothesized that an aerobic therapy program would improve quality of life, strength, and decrease PTSD episode frequency.

Operational Definitions

- **Post-Traumatic Stress Disorder (PTSD):** an anxiety disorder that can result in reliving of the trauma, nightmares, flashbacks, distress, and a feeling of helplessness; usually occuring following exposure to severe trauma (Horner & Hammer, 2002).
- **Aerobic exercise:** Brisk exercise that promotes the circulation of oxygen through the blood such as running, swimming, and bicycling
- **Amputation:** the removal of a body part (Khan, Dogar, Masroor, 2018).
- **Veteran:** a person who has served and is no longer in the armed forces

Introduction

- 185,000 amputations are preformed every year in the United States (Littman, Thompson, Arterburn, Bouldin, Haselkorn, Sangeorzan, and Boyko, 2015).
- Within the military community 4,578 lower leg amputations occur every year (Kurchi, Kwong, Vogel, Xie, Ripley, and Bates, 2015).
- 40% of military personnel returning from war suffer from mental health problems (Boayke, Buchanan, Wang, Stinger, Geneus, and Scherrer, 2017).
- Common problems following amputation include depression and PTSD (Khan et al., 2018).
- Amputations can result in altered quality of life, musculoskeletal pain, cardiovascular disease, reduced activity levels, and osteoarthritis (Kurichi et al., 2015)

Methods

Referral

- Doctors at the Durham and Charlotte VA referred patients

Inclusion Criteria

- Have a lower leg amputation at the hip within last 3 years
 - Cannot have more than 1 limb amputated
- At least 1 PTSD episode a month

Participants

- 28 men and 2 women (mean age=26 years +/- 3.5 years)
- 25 army, 6 marines, 4 navy, and 1 air force veteran

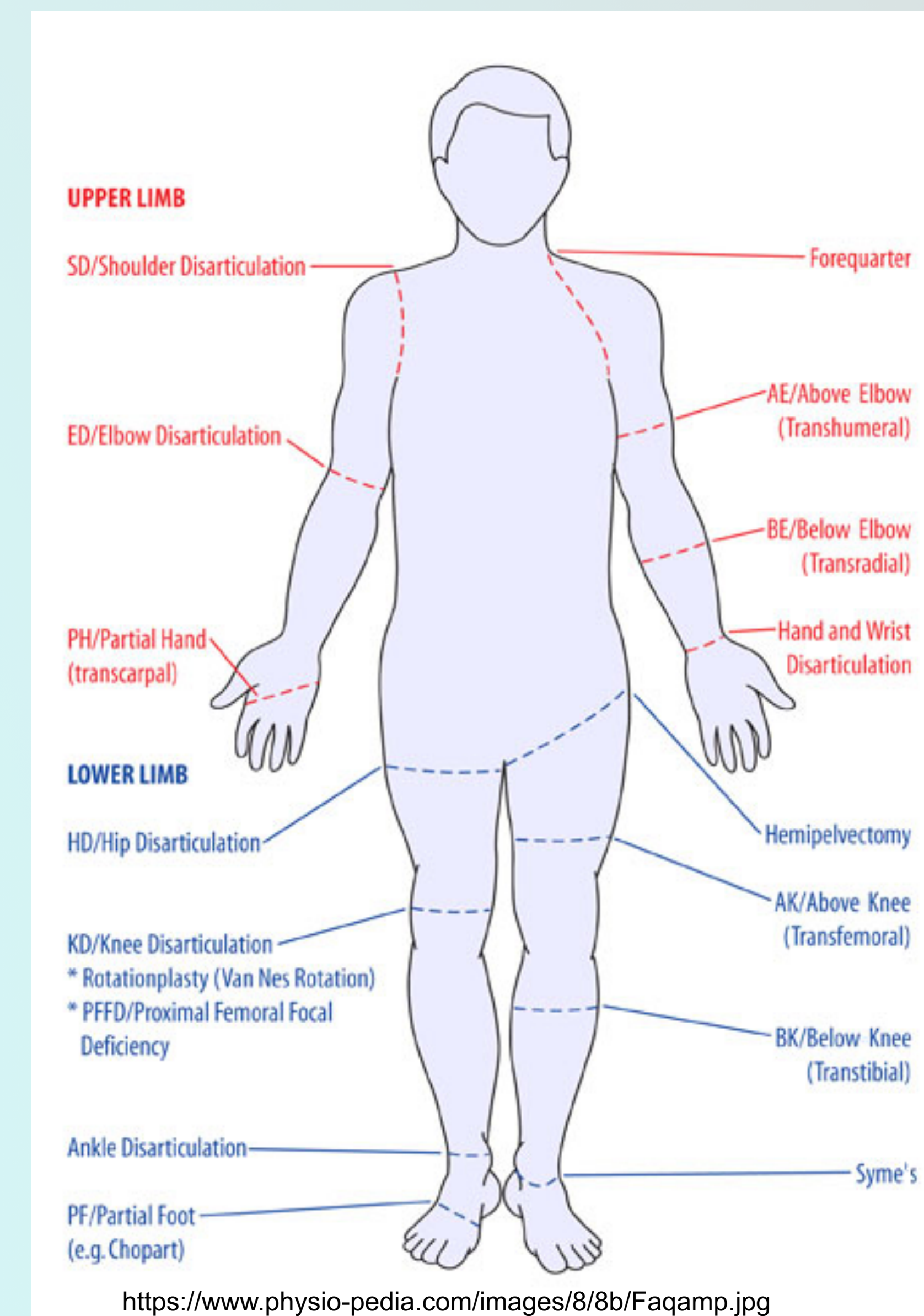
Research Design

- Mixed method: Assessment, videotape, and questionnaires
- 2 groups:
 - Group 1- 1 hour walking protocol and 1 hour aerobic exercise 3X a week
 - Group 2- 1 hour walking protocol 3X a week

Data Analysis

- Linear regression models to determine independent and dependent variables correlation
- ANOVA measures used to measure relationship between strength increases and frequency of PTSD

Types of Amputation



Discussion

- A limitation of this study was the use of both men and women with very few women being tested in order to observe gender differences
- Future research should include participants across the United States instead of just North Carolina
- Based off the results of the research more studies should be done to include upper limb amputations.

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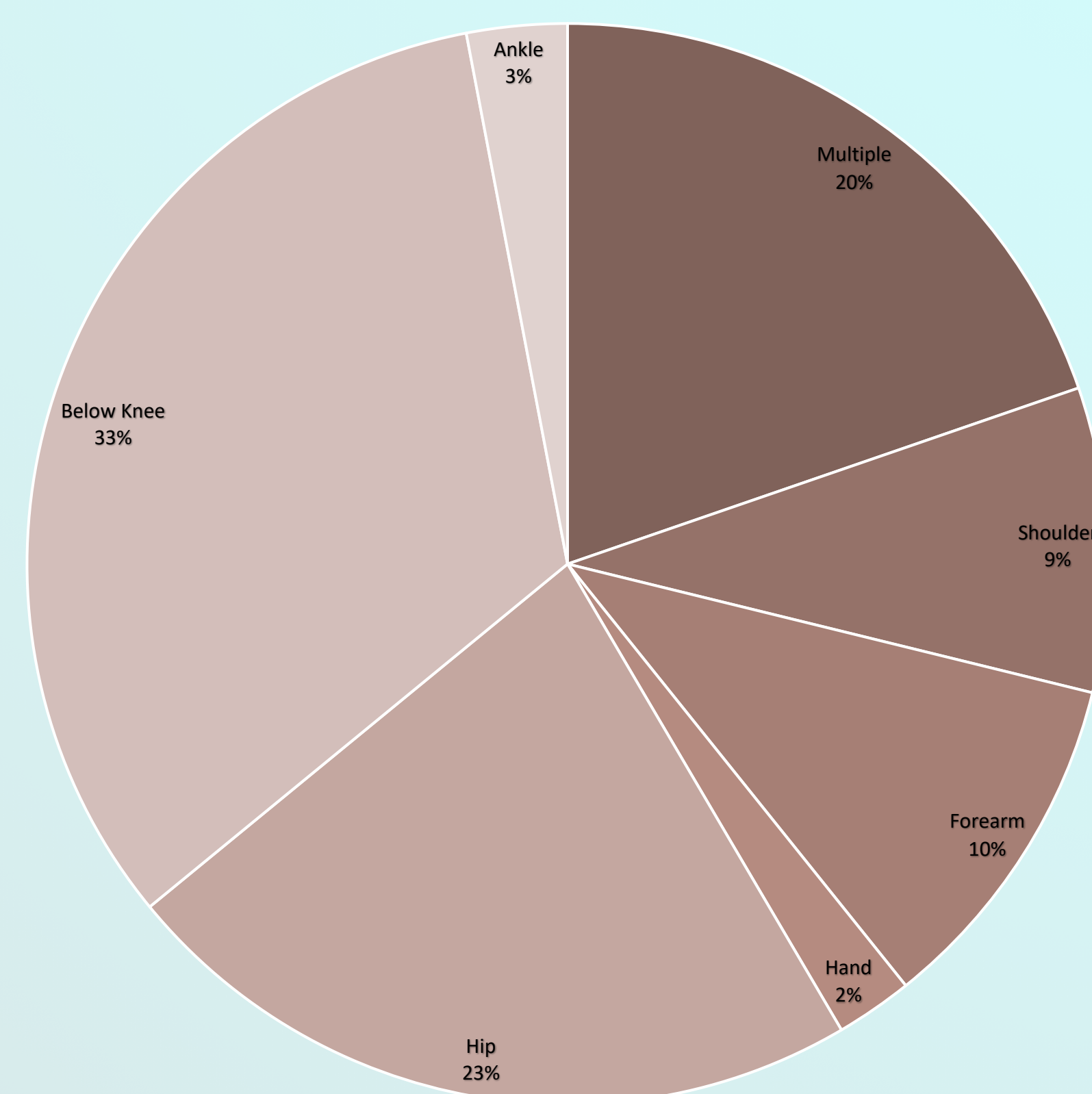


Figure 1. Prevalence of various types of amputation in the United States

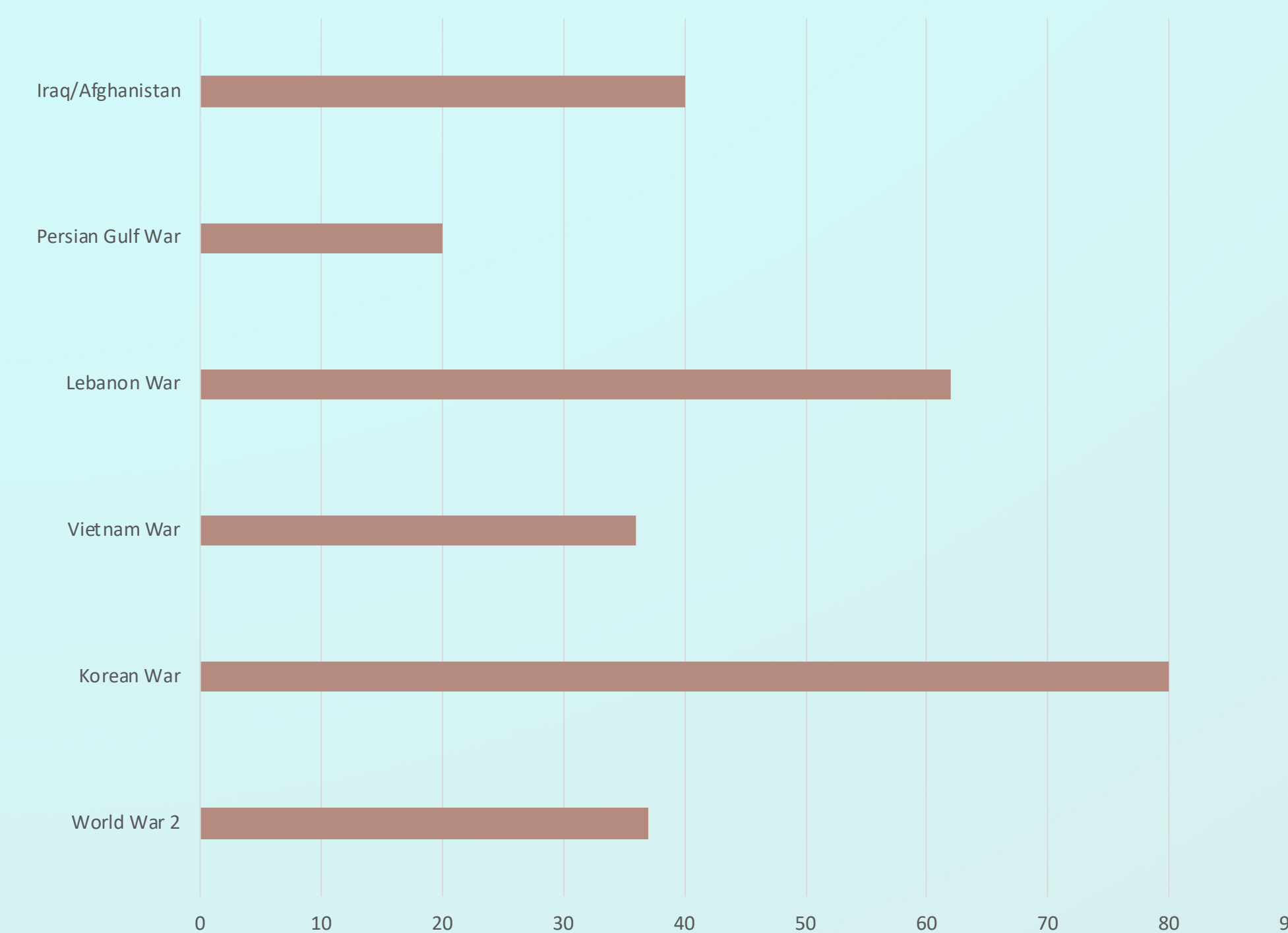


Figure 2. Percentage of veterans returning from war with PTSD.